

Happy Life Years: A Measure of Gross National Happiness

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Summary

Happiness is defined as the degree to which a person enjoys his or her life-as-a-whole. Accordingly 'Gross National Happiness' is defined as the degree to which citizens in a country enjoy the life they live. Individual happiness can be measured by self-report on a single standard question. Hence Gross National Happiness can be measured by the average response to such questions in general populations surveys.

Survey data on average self-report of happiness can be combined with estimates of life expectancy based on civil registration. The resulting index denotes how long and happy people live in a country and can be expressed in a number of Happy-Life-Years (HLY).

Comparison across present day nations shows huge differences on this indicator, HLY varying between 63 (Switzerland) and 21 (Moldavia). About 80% of these differences can be explained by variation in societal characteristics, such as economic development, political democracy and mutual trust. HLY varies also over time. During the last decade it rose in western nations but plunged in the former Soviet nations.

It is argued that HLY is the best available indicator of Gross National Happiness.

Introduction

The concept of 'Gross National Happiness' (GNH) was introduced in the political discourse in the 1960s by the late king of Bhutan, Jigme Dorji Wangchuck. In 1971 the idea was articulated by the present King Jigme Singye Wangchuck in his famous statement that "Gross National Happiness is more important than Gross National Product" (Priesner 1999: 28). In 1991 the idea was mentioned in the Five Year Plan (7th 5-year plan pp. 22) and in 1998 the Prime Minister elaborated the idea in an international address (Thinley 1998).

These statements did not aim at scientific precision in the first place, but served to indicate a political direction. The motto worked well to that end and appeals also outside Bhutan. This success now calls for measurement of the matter. Once we accept the idea that the country should aim at Gross National Happiness we need tools to assess how successful the country is in realizing that end.

Measuring Gross National Happiness requires first of all that we define what happiness is. To that end I start in the following with a review the various meanings of the word and select the meaning that fits best with official statements on the matter. That is the meaning of 'life-satisfaction'. In

the next section, I will consider the available measures of life-satisfaction in nations and conclude that this can best be measured using self-reports. This followed by a section where I argue that survey data on subjective life-satisfaction can be combined with data on life-expectancy and that the resulting estimate of 'happy life years' indicates how long and happy people live in a country. In the final section, I review the available data on that matter and consider the merits of that measure on that empirical basis.

Concept of Happiness

The word happiness is often used interchangeably with the term 'quality of life'. When used in that sense it is an umbrella term for different notions of the good life. These notions can be ordered on the basis of the following two distinctions:

Chances and Outcomes

A first distinction is between opportunities for a good life and the good life itself. This is the difference between potentiality and actuality. I refer to this as 'life-chances'¹ and 'life-results'. Opportunities and outcomes are related, but are certainly not the same. Chances can fail to be realized, due to stupidity or bad luck. Conversely, people sometimes make much of their life in spite of poor opportunities.

This distinction is quite common in the field of public-health research. Pre-conditions for good health, such as adequate nutrition and professional care are seldom mixed up with health itself. Yet, in social policy discussions means and ends are less well distinguished.

Outer and Inner Qualities

A second difference is between 'external' and 'inner' qualities. In the first case the quality is in the environment, in the latter it is in the individual. Lane (1994) made this distinction clear by telling 'quality of society' from 'quality of persons'.

This distinction is also quite common in public health. External pathogens are distinguished from inner afflictions. Yet again, this basic insight is lacking in many social policy discussions.

Four Qualities of Life

The combination of these two dichotomies yields a fourfold matrix. This classification is presented in scheme 1. The distinction between chances and results is presented vertically, the difference between outer and inner qualities horizontally.

¹ In sociology, the term 'life-chances' is used in the more limited meaning of access to scarce resources in society.

In the upper half of the scheme, we see two variants of potential quality of life, with next to the outer opportunities in one's environment, the inner capacities to exploit these. The environmental chances can be denoted by the term *livability*, the personal capacities with the word *life-ability*. This difference is not new. In sociology, the distinction between 'social capital' and 'psychological capital' is sometimes used in this context. In the psychology of stress, the difference is labeled negatively in terms of 'burden' and 'bearing power'.

The lower half of the scheme is about the quality of life with respect to its outcomes. These outcomes can be judged by their value for one's environment and by value for oneself. The external worth of a life is denoted by the term *utility of life*. The inner valuation of it is called *appreciation of life*. These matters are of course related. Knowing that one's life is useful will typically add to the appreciation of it. Yet useful-lives are not always happy lives and not every good-for-nothing really cares. This difference has been elaborated in discussions on utilitarian moral philosophy, which praises happiness as the highest good. Adversaries of that view hold that there is more worth to life than just pleasures and pains. Mill (1861) summarized that position in his famous statement that he preferred an unhappy Socrates to a happy fool.

Scheme 1: Four qualities of life

	Outer qualities	Inner qualities
Life chances	Livability of environment	Life-ability of the person
Life results	Utility of life	<u>Enjoyment of life</u>

Livability of the Environment

The left top quadrant denotes the meaning of good living conditions. Formerly, the term 'happiness' was often used for this particular meaning, especially in social philosophy. Currently, this matter is mostly called 'quality-of-life' or 'wellbeing'. Other terms are 'welfare' and 'level of living'

'Livability' is a better word, because it refers explicitly to a characteristic of the environment and does not have the limited connotation of material conditions. One could also speak of the 'habitability' of an environment, though that term is also used for the quality of housing in particular. Elsewhere I have explored that concept of livability in more detail (Veenhoven 1996:7-9).

Ecologists see livability in the natural environment and describe it in terms of pollution, global warming and degradation of nature. Currently, they associate livability typically with environmental preservation. City

planners see livability in the built environment and associate it with sewer systems, traffic jams and ghetto formation. Here the good life is seen as a fruit of human intervention. In public health this all is referred to as a 'sane' environment.

In the sociological view, society is central. Firstly, livability is associated with the quality of society as a whole. Classic concepts of the 'good society' stress material welfare and social equality, sometimes equating the concept more or less with the welfare state. Current communitaristic notions emphasize close networks, strong norms and active voluntary associations. The reverse of that livability concept is 'social fragmentation'. Secondly, livability is seen in one's position in society. For long, the emphasis was on 'under-class' but currently attention shifts to 'outer-class'. The corresponding antonyms are 'deprivation' and 'exclusion'.

Life-ability of the Person

The right top quadrant denotes inner life-chances. That is: how well we are equipped to cope with the problems of life. This aspect of the good life is also known by different names. Doctors and psychologists use the terms 'quality of life' and 'well-being' to denote this specific meaning. There are more names however. In biology, this meaning is referred to as 'fitness'. On other occasions, it is denoted by the medical term 'health', in the medium variant of the word², or by psychological terms such as 'efficacy' or 'potency'. Sen (1993) calls this quality of life variant 'capability'. I prefer the simple term 'life-ability', which contrasts elegantly with 'livability'.

The most common depiction of this quality of life is absence of functional defects. This is 'health' in the limited sense, sometimes referred to as 'negative health'. In this context, doctors focus on unimpaired functioning of the body, while psychologists stress the absence of mental defects. This use of words presupposes a 'normal' level of functioning. Good quality of life is the body and mind working as designed. This is the common meaning used in curative care.

Next to absence of disease, one can consider excellence of function. This is referred to as 'positive health' and associated with energy and resilience. Psychological concepts of positive mental health involve also autonomy, reality control, creativity and inner synergy of traits and strivings. A new term in this context is 'emotional intelligence'. Though originally meant for specific mental skills, this term has come to denote a broad range of mental capabilities. This broader definition is the favorite in training professions.

A further step is to evaluate capability in a developmental perspective and to include acquisition of new skills for living. This is commonly denoted by the term 'self-actualization'; from this point of view a middle-

² A problem with this name is that the utilitarians used the word utility for subjective appreciation of life, the sum of pleasures and pains.

aged man is not 'well' if he behaves like an adolescent, even if he functions without problems at this level. Since abilities do not develop in idleness, this quality of life is close to the 'activity' in Aristotle's concept of eudaimonia (Ostenfelt, 1994). This quality concept is also currently used in the training professions.

Lastly, the term 'art of living' denotes special life-abilities; in most contexts this quality is distinguished from mental health and sometimes even attributed to slightly disturbed persons. Art of living is associated with refined tastes, an ability to enjoy life and an original style of life (Veenhoven 2003).

Utility of Life

The left bottom quadrant represents the notion that a good life must be good for something more than itself. This presumes some higher values. There is no current generic for these external turnouts of life. Gerson (1976: 795) referred to these kinds as 'transcendental' conceptions of quality of life. Another appellation is 'meaning of life', which then denotes 'true' significance instead of mere subjective sense of meaning. I prefer the more simple 'utility of life', admitting that this label may also give rise to misunderstanding³. Be aware that this external utility does not require inner awareness. A person's life may be useful from some viewpoints, without them knowing⁴.

When evaluating the external effects of a life, one can consider its functionality for the environment. In this context, doctors stress how essential a patient's life is to its intimates. The life of a mother with young children is valued as higher than the life of a woman of the same age without children. Likewise, indispensability at the workplace figures in medical quality of life notions.

At a higher level, quality of life is seen in contributions to society. Historians see quality in the addition an individual can make to human culture, and rate for example the lives of great inventors higher than those of anonymous peasants do. Moralists see quality in the preservation of the moral order, and would deem the life of a saint to be better than that of a sinner.

In this vein, the quality of a life is also linked to effects on the ecosystem. Ecologists see more quality in a life lived in a 'sustainable' manner than in the life of a polluter. In a broader view, the utility of life can be seen in its consequences for long-term evolution. As an individual's life can have many environmental effects, the number of such utilities is almost infinite.

³ A problem with this name is that the utilitarians used the word utility for subjective appreciation of life, the sum of pleasures and pains.

⁴ Frank's (1946) logo-therapy aims to make people believe in meanings of their life they do not see.

Apart from its functional utility, life is also judged on its moral or esthetic value. Returning to Mill's statement that he preferred an unhappy Socrates to a happy fool, Mill did not say this just because Socrates was a philosopher whose words have come down to us; it was also because he admired Socrates as an outstanding human being. Likewise, most of us would attribute more quality to the life of Florence Nightingale than to that of a drunk, even if it appeared that her good works had a negative result in the end. In classic moral philosophy this is called 'virtuous living', and is often presented as the essence of 'true happiness'.

Enjoyment of Life

Finally, the bottom right quadrant represents the inner outcomes of life. That is the quality in the eye of the beholder. As we deal with conscious humans, this quality boils down to subjective appreciation of life. This is commonly referred to by terms such as 'subjective wellbeing', 'life-satisfaction' and 'happiness' in a limited sense of the word.

Humans are capable of evaluating their life in different ways. We have in common with all higher animals that we can appraise our situation affectively. We feel good or bad about particular things and our mood level signals overall adaptation. As in animals these affective appraisals are automatic, but unlike other animals it is known that humans can reflect on that experience. We have an idea of how we have felt over the last year, while a cat does not. Humans can also judge life cognitively by comparing life as it is with notions of how it should be.

Most human evaluations are based on both sources of information, that is: intuitive affective appraisal and cognitively guided evaluation. The mix depends mainly on the object. Tangible things such as our income are typically evaluated by comparison; intangible matters such as sexual attractiveness are evaluated by how it feels. This dual evaluation system probably makes the human experiential repertoire richer than that of our fellow-creatures.

In evaluating our life, we typically summarize this rich experience in overall appraisals. For instance, we appreciate domains of life. When asked how we feel about our work or own marriage, we will mostly have an opinion. Likewise, most people form ideas about separate qualities of their life, for instance how challenging their life is and whether there is any meaning in it. Such judgments are made in different time-perspectives, in the past, the present and in the future. As the future is less palpable than the past and the present, hopes and fears depend more on affective inclination than on cognitive calculation. Next to aspects of life, we also judge life-as-a-whole.

Happiness and other Enjoyments

Even when we focus on subjective enjoyment of life, there are still different meanings associated with the word happiness. These meanings can also be charted in a fourfold classification. In this case, that classification is based on the following dichotomies:

Life-aspects versus Life-as-a-whole

Above, we have seen that appraisals of life can concern aspects, such as marriage or work-life, and one's life-as-a-whole. The word 'happiness' is used in both contexts. Obviously, such appraisals are linked. Enjoyment of aspects of life will typically contribute to the satisfaction with life as a whole (so-called bottom-up effect), and enjoyment of one's life-as-a-whole appears to foster the satisfaction with life-aspects (top-down). Still, these are not identical matters. One can have a happy marriage but still be dissatisfied with life-as-a-whole, or be satisfied with life-as-a-whole in spite of an unhappy marriage.

Passing Delight versus Enduring Satisfaction

The experience of enjoyment can be short-lived or enduring. Again, the word happiness is used for both phenomena. Sometimes it refers to passing moods and at other occasions for stable satisfaction. Once more, these matters are related but not the same.

When combined, these distinctions produce the fourfold classification presented in scheme 2. The difference between part and whole is presented vertically, and the distinction between passing and enduring enjoyment horizontally.

Scheme 2: Four kinds of satisfaction

	<i>Passing</i>	Enduring
Life aspects	Instant satisfactions (instant utility)	Domain-satisfactions
Life as a whole	Top experience	<u>Life-satisfaction</u> (Happiness)

Pleasure

The top-left quadrant represents passing enjoyments of life-aspects. Examples are the delight of a cup of tea at breakfast, the satisfaction with a chore done or the enjoyment of a piece of art. Nobel laureate Kanahan (1999) calls this 'instant-utilities'. Frequent experience of such passing pleasures is probably a necessary condition for enduring satisfaction with

life-as-a-whole, but probably not a sufficient one since life-satisfaction requires also a sense of meaning.

The term happiness is used in the sense of pleasure, especially by critics of utilitarianism⁵ who thus denounce that moral philosophy as superficial hedonism.

Domain Satisfaction

The top right quadrant denotes enduring appreciation of life-aspects, such as marriage satisfaction and job-satisfaction. This is currently referred to as *domain-satisfactions*. Though domain-satisfactions depend typically on a constant flow of instant-satisfactions, they have some continuity of their own. For instance, one can remain satisfied with one's marriage even if one has not enjoyed the company of the spouse for quite some time.

The term happiness is sometimes used in this sense, in particular to denote satisfaction with one's career. That use of the word is mostly also polemic and serves to denote that such rat-race happiness is not very worthwhile.

Satisfaction with major domains of life obviously adds to satisfaction with one's life-as-a-whole. Yet these things are not the same. One can be satisfied with one's work and marriage, but still be dissatisfied with one's life-as-a-whole because one has failed a cause.

Top-experience

The bottom right quadrant denotes the combination of passing experience and appraisal of life-as-a-whole. That combination occurs typically in so-called 'top-experiences', which involve short-lived but quite intense oceanic feelings. Mystics and poets use the term happiness often in this sense. Yet this meaning should not be equated with enduring enjoyment of life-as-a-whole; these phenomena are in fact antithetical, people who go through top-experiences most often are typically not the most satisfied with life.

Life-satisfaction

Lastly, the bottom-right quadrant represents the combination of enduring satisfaction with life-as-a-whole. This is happiness in the sense of *life-satisfaction*. This meaning is clearly the most relevant for policy makers and comes closest to the notion of Gross National Happiness.

⁵ Utilitarian moral philosophy holds that the good and bad of all actions should be judged by its effects on human happiness, the morally best action being the one that provides the 'greatest happiness for the greatest number'. Jeremy Bentham (1798) is a spokesman of this view. When applied on public choice, this theory is known as 'rule-utilitarianism'.

Likeness with the Bhutanese Notion of 'Gross National Happiness'

Close reading of statements of the Bhutanese government on 'Gross national Happiness' learns that happiness is seen as a state of an individual and not as a state of society. The goal is to promote the happiness of citizens, and the development of society is one of the means (Thingley 1998: 14-15). Happiness as such is distinguished from its presumed determinants, such as 'material wealth', 'Enlightenment education', 'natural environment' and 'good governance' (Thingley 1998 15-22). This means that the concept belongs in the right half of scheme 1; in the column of 'inner' qualities of life.

The first official document speaks about the 'emotional wellbeing of the population' (7th 5-year plan pp. 22) and in later statements the term is used interchangeably with 'good mood' and 'contentment'. This means that the concept addresses experienced outcomes of life and fits the right-bottom quadrant in scheme 1, which denotes 'satisfaction'.

The texts make also clear that happiness is seen as a lasting state of mind, and not as a passing mood. The aim is obviously not at creating short-lived thrills. So the concept must be placed in the right half of scheme 2 that denotes 'enduring satisfaction'. Likewise, the texts leave no doubt that happiness is seen as an appraisal of life-as-a-whole rather than as satisfaction with a particular domain of life. So the Bhutanese notion of happiness fits the right-bottom quadrant of scheme 2; that is life-satisfaction.

Definition of Individual Happiness

In this line, happiness can be defined as the degree to which a person evaluates the overall quality of his present life-as-a-whole positively. In other words, how much the person likes the life he/she leads.

Scope of Evaluation

The concept of happiness denotes an *overall* evaluation of life. Therefore, the appraisal that life is 'exciting' does not mark it as 'happy'. There may be too much excitement in life, and too little of other qualities. The overall evaluation of life involves all the criteria figuring in the mind of the individual: how good it feels, how well it meets expectations, how desirable it is deemed to be, etc.

Kind of Evaluation

When we appraise how much we appreciate the life we live, we seem to use two sources of information: Affectively, we estimate how well we feel generally, and at the cognitive level we compare 'life as it is' with standards of 'how life should be'. The former affective source of information seems generally to be more important than the latter cognitive one (Veenhoven 1996a: 33-35). The word happiness is commonly used for these 'subtotals' as well as for the comprehensive appraisal. I use the terms '*overall happiness*' or

'life satisfaction' for the comprehensive judgment and refer to the affective and cognitive sub-appraisals as respectively '*hedonic level of affect*' and '*contentment*'. These concepts are delineated in more detail in Veenhoven (1984: chapter 2).

Temporal Range

Appraisals of life can concern different periods in time: how life has been, how it is now, and how it will probably be in the future. These evaluations do not coincide necessarily; one may be positive about past life, but negative about the future. The focus of this paper is on satisfaction with present life.

I am not sure that this definition fully fits with the notion that authors of Bhutanese government texts had in mind. Possibly some of them aimed at a specific Buddhist variant and thought of serene contentment in the first place. If so, I would still prefer the above definition, since it has several advantages. One advantage is that this concept of happiness is broad enough to encompass such local variations. Another plus is that this concept has proven to be well measurable and comparable across cultures.

Definition of Gross National Happiness

Following the above definition of individual happiness, Gross National Happiness can be defined as the degree to which citizens in a country enjoy the life they live. Gross National Happiness is then an aggregate concept, like the concept of Gross National Product that sums goods and services. If every citizen counts equally much in this sum, the concept can be quantified using the average of individual happiness in the country.

Measurement of of Happiness

In Bhutanese statements about GNH it is commonly assumed that happiness cannot be quantified and compared across time and nations like GNP. Yet the kind of happiness defined above can be measured using surveys in which a representative sample of citizens is asked how much they enjoy their life-as-a-whole. Since the 1960s this is common practice and this research has yielded much information about the usefulness of this method.

Measurement has long been understood as 'objective' and 'external' assessment, analogous to the measurement of blood pressure by a doctor. By now, we know that happiness cannot be measured that way. Steady physiological correlates have not been discovered, and probably never will be. Nor have any overt behaviors been found to be consistently linked to inner enjoyment of life. Like most attitudinal phenomena, happiness is only partially reflected in behavior. Though some social behaviors tend to be more frequent among the happy (active, outgoing, friendly), such conduct is also observed among unhappy persons. Likewise, non-verbal behaviors

such as frequent smiling or enthusiastic movements appear to be only modestly related to self-reports of happiness. Consequently, estimates of someone's happiness by his peers are often wrong. Suicidal behavior is probably more indicative of happiness. Almost all people who attempt or commit suicide are quite unhappy. However, not all the unhappy seek resort to suicide. In fact, only a fraction does.

Survey Questions on Happiness

Inference from overt behavior being impossible, we must make do with questioning. That is, simply asking people how much they enjoy their life-as-a-whole. Such questions can be posed in various contexts; clinical interviews, life-review questionnaires and common survey interviews. The questions can be posed in different ways; directly or indirectly, and by means of single or multiple items. A common survey question is:

Taking all together, how satisfied or dissatisfied are you currently with your life as a whole?

1 2 3 4 5 6 7 8 9 10

Dissatisfied

Satisfied

Since the 1970's, such questions have been included in many 'Quality-of-Life' surveys all over the world. There is now a growing body of data on happiness in nations. Presently there are comparable surveys in 67 nations. The data are brought together in the 'World Database of Happiness' (WDH 2003).

Doubts about Happiness Self-reports

Yet there are many qualms about such simple self-reports of happiness. Elsewhere I have considered the objections and inspected the empirical evidence for claims about bias. I will summarize the main points below. For more detail and references, see Veenhoven 1984 chapter 3 and Veenhoven 1993, chapter 5.

Validity

Critics have suggested that responses to questions on life-satisfaction actually measure other phenomena. Rather than indicating how much the respondent enjoys life, answers would reflect his normative notions and desires.

No Notion

One of the misgivings is that most people have no opinion at all about their happiness. They would be more aware of how happy they are supposed to be, and report that instead. Though this may happen incidentally, it does not appear to be the rule. Most people know quite well whether they enjoy life. Eight out of ten Americans think of it every week. Responses on questions about happiness tend to be prompt. Non-response on these items is low; both absolutely ($\pm 1\%$) and relatively to other attitudinal questions. 'Don't know' responses are infrequent as well.

A related assertion is that respondents mix up how happy they actually are, with how happy other people think they are, given their situation. If so, people considered being well off would typically report to be very happy, and people regarded as disadvantaged should characterize themselves as unhappy. That pattern is observed sometimes, but it is not general. For instance, in The Netherlands, good education is seen as a pre-requisite for a good life, but the highly educated appear slightly less happy in comparison to their less educated counterparts.

Colored Answers

Another objection concerns the presence of systematic bias in responses. It is assumed that questions on happiness are interpreted correctly, but that responses are often false. People who are actually dissatisfied with their life would tend to answer that they are quite happy. Both ego-defense and social-desirability would cause such distortions.

This bias is seen to manifest itself in over-report of happiness; most people claim to be happy, and most perceive themselves as happier than average. Another indication of bias is seen in the finding that psychosomatic complaints are not uncommon among the happy. However, these findings allow other interpretations as well. Firstly, the fact that more people say to be happy than unhappy does not imply over-report of happiness. It is quite possible that most people are truly happy (some reasons will be discussed below). Secondly, there are also good reasons why most people think that they are more happy than average. One such reason is that most people are like critical scientists and think that unhappiness is the rule. Thirdly, the occurrence of headaches and worries among the happy does not prove response distortion. Life can be a sore trial some times, but still be satisfying on a balance.

The proof of the pudding is in demonstrating the response distortion itself. Some clinical studies have tried to do so by comparing responses to single direct questions with ratings based on depth interviews and projective tests. The results are generally not different from responses to single direct questions posed by an anonymous interviewer.

Reliability

Though single questions on happiness seem to measure what they are supposed to measure, they measure it rather imprecisely.

When the same question is asked twice in an interview, responses are not always identical. Correlations are about +. 70. Over a period of a week, test-retest reliability drops to circa +. 60. Though responses seldom change from 'happy' to 'unhappy', switches from 'very' to 'fairly' are rather common. The difference between response-options is often ambiguous. The respondent's notion about his/her happiness tends to be global. Thus, the choice for one answer-category or the next is sometimes haphazard.

Because choice is often arbitrary, subtle differences in interrogation can exert considerable effect. Variations in place where the interview is held, characteristics of the interviewer, sequence of questions and precise wording of the key-item can tip the scale to one response or the other. Such effects can occur in different phases of the response process; in the consideration of the answer as well as in the communication of it.

Much of these biases are random, and balance out in large samples. Therefore, in large samples, random error does not affect the accuracy of happiness averages. Yet it does affect correlations, random error 'attenuates' correlations. Random error can be estimated by means of multiple-trait-multiple-method (MTMM) studies, and correlations can be corrected (disattenuated) on that basis.

Some biases may be systematic, especially bias produced by technique of interrogation and sequence of questions. Bias of that kind does affect the reliability of distributional data. In principle it does not affect correlations, unless the measure of the correlate is biased in the same way (correlated error). To some extent, systematic error can also be estimated and corrected.

Comparability

Another common qualm is that self-ratings of happiness cannot be meaningfully compared between persons and certainly not across cultures.

Interpersonal Comparability

It is commonly assumed that happiness is a matter of comparison of life-as-it-is with standards of how life-should-be and it is also assumed that these standards differ highly across individuals. Together, these assumptions imply that happiness is not comparable interpersonally; score 6 on the above mentioned scale may mean something quite different for person A than for person B.

If happiness is so idiosyncratic an appraisal indeed, it is unlikely to be correlated to hard differences in income, health and companionship. However, that prediction is not confirmed in empirical studies. In poor countries at least, income does matter to happiness. Happiness is also firmly related health, not only does good health add to happiness, but reversely,

happiness also sustains physical health and is even a strong predictor of long-term longevity (Danner et. al. 2001). Likewise, happiness is universally related to marriage and friendship (Diener 2000).

The available data fit better with the theory that happiness depends on the gratification of inborn needs and in that context it is likely that the experience of enjoying one's life has a very similar meaning for all humans, comparable to experiences of pain and hunger. I have discussed this matter in more detail elsewhere (Veenhoven 1991, 1997). See also Ng (1997) on this issue.

Comparability Across Nations

Average happiness differs markedly across nations. In scheme 3, we will see that Russians score currently 5.4 on a 0-10 scale, while in Canada the average is 7.7. Does that mean that Russians really take less pleasure in life? Several claims to the contrary have been advanced. I have checked these doubts elsewhere (Ouweneel & Veenhoven, 1991, Veenhoven 1993b). The results of that inquiry are summarized below.

Language: The first objection is that semantic differences hinder comparison. Words like 'happiness' and 'satisfaction' would not have the same connotations in different tongues. Questions using such terms would therefore measure slightly different matters. I checked that hypothesis by comparing the rankorder produced by three kinds of questions on life-satisfaction: a question about 'happiness', a question about 'satisfaction with life' and a question that invites to a rating between 'best- and worst possible life'. The rankorder appeared to be almost identical. I also compared responses on questions on happiness and satisfaction in two bi-lingual countries, and found no evidence for linguistic bias either.

Desirability: A second objection is that responses are differentially distorted by *desirability-bias*. In countries where happiness ranks high in value, people would be more inclined to overstate their enjoyment of life. I inspected that claim by checking whether reported happiness is indeed higher in countries where hedonic values are most endorsed. This appeared not to be the case. As a second check, I inspected whether reports of general happiness deviate more from feelings in the past few weeks in these countries, the former measure being more vulnerable for desirability distortion than the latter. This appeared not to be the case either.

Response styles: A third claim is that *response-styles* distort the answers dissimilarly in different countries. For instance, collectivist orientation would discourage 'very' happy responses, because modest self-presentation is more appropriate within that cultural context. I tested this hypothesis by comparing happiness in countries differing in value-collectivism, but found no effect in the predicted direction. The hypothesis failed several other tests as well.

Western concept? A related claim is that happiness is a typical western concept, which is alien to people in non-western nations. Unfamiliarity would lead to lower scores. If so, we can expect more 'don't know' and 'no answer' responses in non-western nations. However, that appeared not to be the case⁶.

Still another way to check the misgivings about cross-cultural comparability of happiness is to consider the correlation between average happiness in nations and characteristics of these nations. If conceptions of happiness are so different and responses so differently distorted, we will find little correlation with actual wealth, freedom and peace in the country. Yet comparative research has learned that about 75% of the observed differences in average happiness can be explained that way (Veenhoven 1993, see also section 5.3.7). So the unique cultural variance is at best 25% and probably less.

Measure of Gross National Happiness

Gross National Happiness was defined as the degree to which citizens in a country enjoy their life-as-a-whole (cf. Section 2.4) and next we have seen that individual happiness can be adequately measured by self-reports. Hence Gross National Happiness can be measured by the aggregation of individual happiness ratings as observed in surveys of the general population. Gross National Happiness can then be quantified by descriptive statistics of general tendency, such as the mean.

Average Happiness in Nations

This is in fact common practice and at this we know the average happiness in 67 nations in the 1990s. Some illustrative cases are presented below in scheme 3. The full list is on appendix 1.

Scheme 3: Happiness in nations in the 1990s. Average self-reports on scale 0-10

Top >7,7		Middle range ± 6,0		Bottom <4,0	
Switzerland	8,1	Bolivia	6,2	Russia	4,2
Denmark	8,0	Poland	6,2	Georgia	4,1
Iceland	7,8	Bangladesh	6,0	Armenia	3,7
Luxembourg	7,8	Turkey	5,9	Ukraine	3,3
Canada	7,7	South-Africa	5,7	Moldavia	3,0

Source: World Database of Happiness

⁶ In Japan do we see a higher non-response indeed, though still below 5%. Still this not a general non-western pattern. In India and Nigeria non-response is at the same level as in western nations.

Happiness in Bhutan

Happiness has not yet been assessed in Bhutan. Though a few surveys have been conducted in that country, none of these involved questions about happiness. This lack illustrates that the concept of Gross National Happiness has served to express an intention in the first place.

For the time being, we can only speculate about the level of happiness in Bhutan. Yet the available data on other countries allow an educated guess. Comparative research has revealed strong links between average happiness in nations and several societal characteristics and on that basis I predict that current Bhutan will score in the lower middle range between 6 and 5.

I do not expect a high level of happiness in present day Bhutan because the material standard of life is still too low and the culture is collectivistic. Another reason for my expectation is that the country faces major social change. The dramatic fall of happiness in the post communist world illustrates that this may reduce happiness temporarily. On the other hand Bhutan scores well on quality of governance and the country is in peace. Possibly its distinct culture also has a positive effect on average happiness. So I do not expect that unhappiness prevails in the country.

Combined Measure of 'Happy Life Years'

The concept of Gross National Happiness can also be operationalized by combining the above-discussed measure of average happiness in the country with data about longevity. Together that provides an estimate of how long and happy people live in a country.

Why Combine?

This combination has two advantages: A pragmatic advantage that the duration of happiness is taken into account. Next a theoretical advantage is that this combination fits an evolutionary perspective on the good life.

Taking Duration into Account

One could imagine that people live happy in a country but not long, possibly as a result of too much indulgence. If so, many would opt for a less happy but longer life. This illustrates that we should not only consider the degree of happiness, but also its duration.

A similar problem exists with the use of life-expectancy as a social indicator. If growing older means that we spend more years ailing, the rise of longevity does not mark real progress. That problem was solved by introducing the measures of 'Disability Adjusted Life Years', which count only the number of years spend in good health. Similarly we can compute 'Happiness Adjusted Life Years'. In section 4. 2 I will show how.

Significance for Biological Adaptation

Longevity is an indicator of successful adaptation for all creatures; any organism perishes if it fails to meet the demands of its environment. Survival is the only indicator of good adaptation for most species, but in higher animals successful adaptation also reflects in affective experience. The basic function of feelings is probably to inform the organism whether it is in the right pond or not. Since this faculty is only required in organisms that can move from one environment to another, it exists probably only in higher animals and not in plants (Morris 1992).

Like other higher animals humans are also endowed with the faculty of affective experience. Research has shown that our affective reaction typically precedes cognitive appraisals (Zajonc 1980), which suggests that the development of reason in the human species did not replace the earlier affective orientation system but came to function next to that. There is also evidence that human judgements of their life-as-a-whole draw on affective information in the first place (Schwarz & Strack 1991) and that is another indication that this orientation system still works.

In this view, happiness is another signal of good adaptation, which can be meaningfully combined with longevity. If people live long and happy in a society, that society is apparently successful in meeting the needs of the human species.

This brings me to the wider point that the outcome of life in happy life years also indicates how well the living conditions in the country fit with the life-abilities of its citizens. That link is visualized in scheme 4 This scheme presents the same fourfold as in scheme 1, with addition of key words from biological adaptation theory. The added arrows signify that both happiness and longevity in the right bottom quadrants are the result of preconditions depicted in the two top-quadrants and in particular an outcome of the fit between demands of the environment and life-ability of the individual. Hence the realized number of happy life years in a country indicates the chances for a life and analysis of variation in HLY can therefore help to identify the conditions that are most crucial for human thriving.

Scheme 5: Biological view on relations between qualities of life

	<i>Outer qualities</i>	Inner qualities
Life chances	Livability of environment (biotope)	Life-ability of the person (Fitness)

Life results	Utility of life (ecological function)	Survival Feeling
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How Combine?

The number of years citizens live happily in a country can be measured by combining information about length of life drawn from civil registrations of birth and death with data on overall appreciation of life as assessed in surveys. The following simple formula can be applied:

$$\text{Happy-Life-Years} = \text{Life-expectancy at birth} \times \text{0-1 happiness}$$

Suppose that life expectancy in a country is 50 years, and that the average score on a 0 to 10-step happiness scale is 5. Converted to a 0-1 scale, the happiness score is than 0,5. The product of 50 and 0,5 is 25. So the number of happy life years is 25 in that country. If life expectancy is 80 years and average happiness 8, the number of happy life years is 64 (80 x 0,8).

Theoretically, this indicator has a broad variation. The number of Happy Life Years is zero if nobody can live in the country at all, and will be endless if society is ideal and its inhabitants immortal. The practical range will be between about 20 and 75 years. Presently at least, life expectancy at birth in nations varies between 30 and 80, whereas average happiness is seldom lower than 0,4 on a 0 to 1 scale and seldom higher than 0,8. The number of happy-Life-Years will always be lower than standard life expectancy. It can equal real length of life only if everybody is perfectly happy in the country (score 1 on scale 0 to 1).

High HLY means that citizens live both long and happily, low HLY implies that the life of the average citizen is short and miserable. Medium HLY values can mean three things: 1) both moderate length-of-life and moderate appreciation-of-life, 2) long but unhappy life, and 3) short but happy life.

I have described this indicator in more detail elsewhere (Veenhoven 1996, 2000). It scored highest in a scholarly review of social indicators (Hagerty ea. 2001).

Findings on Happy Life Years in Nations

Happy Life Years can be compared across nations and over time. Such comparisons reveal striking differences and these differences can be linked to societal development. Below I present some illustrative findings.

Difference Across Nations

Data on Happy-Life-Years in nations are published on the World Database of Happiness (WDH 2003). This continuous register of research on subjective enjoyment of life is updated regularly. Currently it provides data on 67 nations in the 1990s. These data are presented on appendix A. Scheme 6 presents some illustrative cases.

Scheme 6: Happy-Life-Years in nations in the 1990s

Top > 58 years		Middle range \pm 41years		Bottom <30 years	
Switzerland	63,0	Philippines	43,7	Georgia	29,7
Iceland	61,8	Greece	41,4	Russia	27,8
Denmark	59,9	Turkey	40,4	Armenia	26,2
Sweden	59,9	Hungary	38,5	Ukraine	22,5
Ireland	58,4	Bolivia	37,5	Moldavia	20,5

We cannot compute HLY for Bhutan, since we do not yet know average happiness. If we assume that average happiness is about 5.5 in Bhutan (cf. section 3.3.2) the number of happy life years would be about 34⁷.

Trend Over Time

Time series are available for a few nations, for the USA since 1948, for Japan since 1958 and for the first member states of the European Union since 1973. All these nations witnessed a rise in the number of happy-life-years. This is mainly because life expectancy augmented in all these nations, but in several cases HLY was also boosted by a rise in average happiness. The most spectacular case of that kind is Italy, where HLY rose 12 years since 1973.

Scheme 7 presents the longest available time series, that of the USA 1948-1998. Americans gained 7 Happy-Life-Years over these 50 years. Since average happiness remained at the same level over that period, this rise in HLY is entirely due to the rise in life expectancy. In this case, the proportional rise of HLY illustrates that this rise in length of did not go at the cost of lower quality of life. If the extra years added were spend in misery, HLY would have lagged or could even have declined.

HLY went down in the former Soviet Union after the velvet revolution. Both happiness and life-expectancy plumped after 1990 and especially during the economic crisis in 1996. The latest data show a gradual recovery.

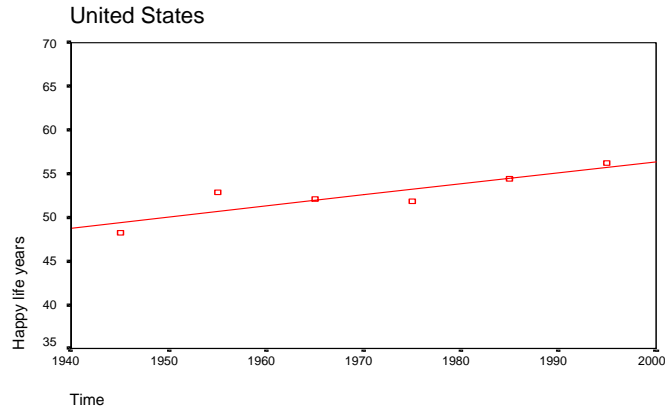
Societal Correlates of HLY

The next question is of course whether there is a system in these differences and in particular whether the differences fit current conceptions of what a good society is like. To answer that question I inspected the

⁷ Life expectancy in Bhutan was 61.5 in 1999 (*Human Development Report 2001*, pp. 143)

statistical relationship between HLY and five societal qualities that are currently on the political agenda. These qualities are: 1) material wealth, 2) freedom, 3) social equality, 4) brotherhood, and 5) justice. The indicators used for that purpose are enumerated in appendix B.

Scheme 7: Happiness Adjusted Life Years in the USA 1948-1998



The analysis involves three steps: The first step is assessing how each of these societal characteristics relates to HLY. For that purpose I plotted scattergrams and computed zero-order correlations. Next I inspected to what degree the observed correlations could be attributed to differences in economic development across nations. For that purpose I computed partial correlations, controlling wealth of the country. Lastly I considered how much of the variance in HLY across nations could be explained by these societal characteristics together. An overview is presented in scheme 8. Below I will expand on the main findings.

Wealth

Until recently, quality-of-life in nations was in fact equated with material prosperity and measured by GDP per capita. It is now acknowledged that money is not everything, but wealth is still prominent in quality-of-life indexes such as the Human Development Index (UNPD 2001) and Estes' (1984) Index of Social Progress. How does this hallmark of 'assumed' quality-of-life relate to our measure of 'apparent' quality-of-life?

The relation between income per head and HLY in nations is presented in scheme 9. That scattergram shows a strong correspondence, the correlation coefficient is +. 73. This result fits the common assumption that wealth is essential to quality-of-life. Yet at a closer look one can see that there is a limit to the benefits of material

wealth. In the scattergram one can recognize the curve of diminishing returns. The correlation is mainly in the left segment of the scattergram among nations with an income per head below \$ 15. 000. There is hardly any correlation among the richer nations ($r = +. 18$).

Scheme 8: Societal Qualities and Happy-Life-Years in 67 nations in the 1990s

Condition in nation	Correlation with HLY		N
	Zero-order	Wealth Controlled	
Wealth			
Purchasing power per head *	+ . 73	-	66
Freedom			
Economic *	+ . 71	+ . 38	64
Political *	+ . 53	+ . 13	63
Personal	+ . 61	+ . 31	45
Equality			
Disparity in incomes *	- . 10	+ . 37	62
Discrimination of women	- . 46	- . 12	51
Disparity in happiness	- . 64	- . 37	54
Brotherhood			
Tolerance	+ . 72	+ . 43	55
Trust in compatriots	+ . 20	+ . 20	37
Voluntary work	+ . 40	+ . 31	53
Social security	+ . 34	- . 27	34
Justice			
Rule of law *	+ . 65	+ . 20	64
Respect of civil rights *	+ . 60	+ . 20	60
Corruption	- . 73	- . 32	40
Explained variance by variables marked with *	66%		60

Indicators described on appendix B

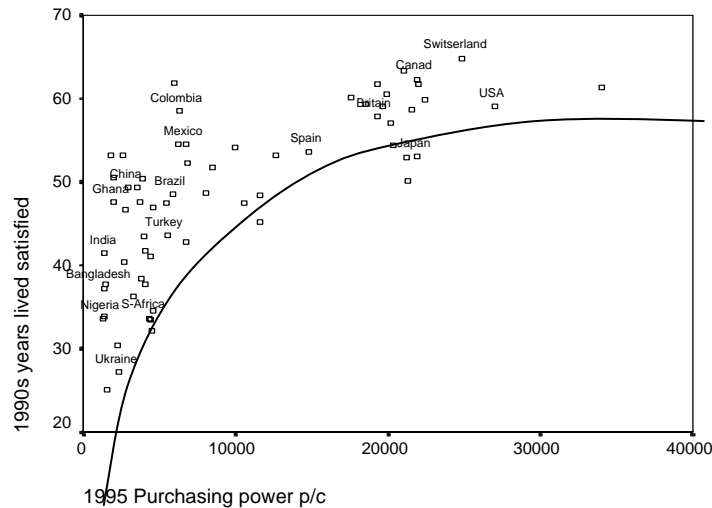
Freedom

Opinion about the blessings of freedom is mixed. Individualistic social philosophy assumes that people themselves know best what they need, and hence that they will thrive better if they can follow their own preferences. Conservatives doubt that people really know what is best for them and rather stress the wisdom of tradition and experts. Some schools of thought see different effects of different variants of freedom. Currently the New Right is quite positive about economic freedom, but at the same time it is

critical about freedom in the private sphere of life. Free sex and the legalization of soft drugs are seen to as a treat to the quality-of-life. Likewise a common view in South-East Asia is that economic freedom will improve the human lot but not political freedom.

The relation between political freedom and HLY is presented in scheme 10. Again we see a positive correlation, but the shape of the relation is linear in this case, which suggests that freedom has not yet met its limit. Similar patterns appear in the relation of economic freedom and personal freedom with HLY. These findings support the liberal position. I have discussed this matter in more detail elsewhere (Veenhoven 1999, 2000b).

Scheme 9: Wealth and Happy-Life-Years in 66 nations in the 1990s



Free nations are typically also rich nations and hence the partial correlations in table 1 are considerably lower than the zero-order correlations. This could mean that the zero-order correlations are largely spurious and that wealth is the main determinant of HLY. Yet is it also possible that freedom and wealth affect HLY equally much or that freedom affects HLY through its effects on the growth of wealth. By lack of good time series we cannot disentangle these effects as yet. For the time being, the partial correlations mark a minimum.

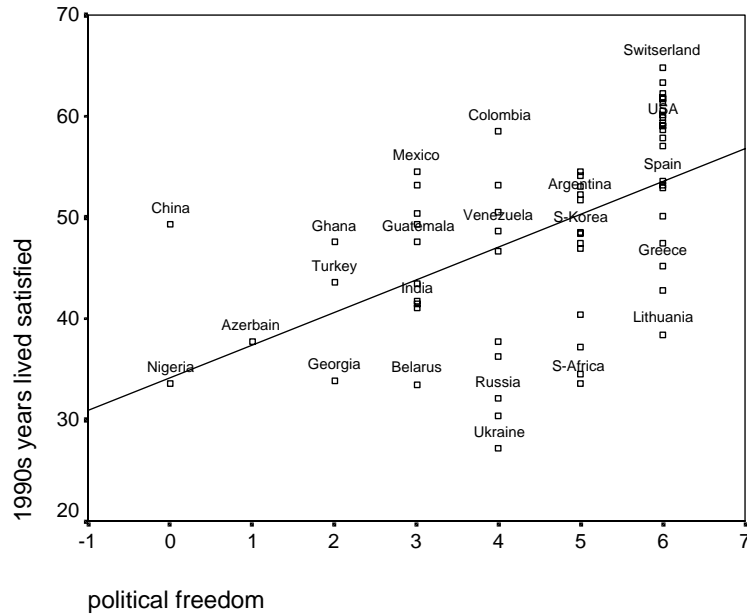
Equality

There is also difference of opinion on the significance of social equality for the quality-of-life in nations. Egalitarians claim that social inequality is antithetical to quality-of-life, not only because it is morally unjust but also because of its detrimental effects on self-respect and social bonds.

Conservatives rather stress the positive functions of inequality and expect that enforced equality will go at the cost of quality-of-life. The discussion focuses very much on income-equality.

The evidence is mixed in this case, since not all kinds of equality relate in the same way to HLY. Surprisingly there is no statistical association with income inequality. The scattergram on scheme 11 shows that people live equally long and happy in nations with small income disparities, such as Japan, as in nation with great income differences, such as Mexico. Statistical control for wealth of the nations suggests even a positive effect of income inequality.

Scheme 10: Political freedom and Happy-Life-Years in 63 nations in the 1990s

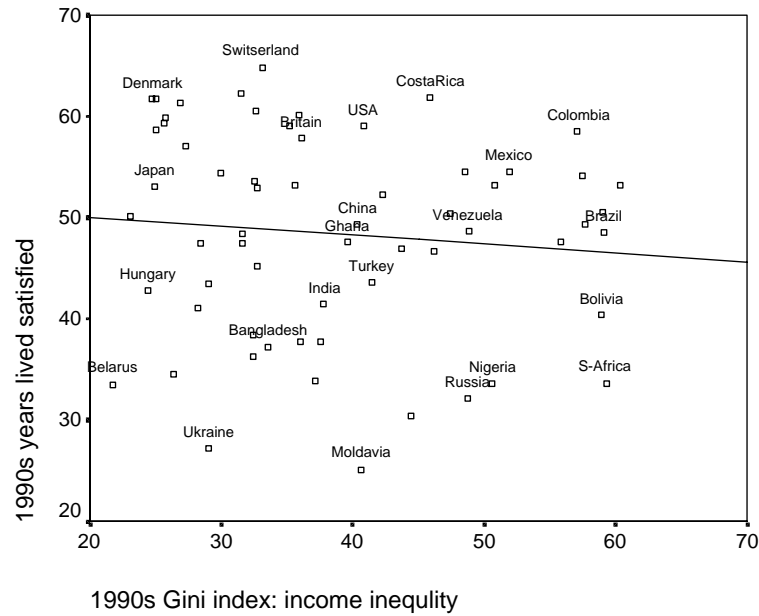


The correlation with inequality between males and females is more in line with egalitarian supposition; HLY being higher in nations where women are least discriminated. Yet the partial correlation is quite small, which could mean that gender equality works out less beneficial after all.

HLY relates most strongly with difference in happiness as measured by its standard deviation and this correlation remains robust after control for wealth of the nation. Elsewhere I have argued that social inequality in nations cannot be measured inclusively by adding differences in access to different matters and the disparities in access to relevant resources (inputs) reflect best in the dispersion of happiness (output) (Veenhoven 2002). If I am

right in that, these correlations mean that inequality still matters, though apparently not the specific inequalities that figure most prominently on the political agenda these days.

Scheme 11: Income Inequality and Happy-Life-Years in 62 nations in the 1990s



Brotherhood

Next to freedom and equality, 'brotherhood' figured in the slogan of the French revolution (*Liberté, égalité, and fraternité*) and social solidarity is still seen as a prerequisite for a good life. In this analysis I considered two aspects of brotherhood in nations, first interpersonal respect and cooperation and second 'organized solidarity' in collective systems of social insurance.

The indicators of interpersonal relations relate positively to HLY. The strongest correlation is with 'tolerance' as measured by acceptance of minority group members as a neighbor. There is also a positive correlation with self-reported trust in compatriots and with activity in voluntary organizations. All these correlations are largely independent of wealth of the nation.

The case of 'organized solidarity' is different however. The zero-order correlation between social security expenditures and HLY is positive, but control for wealth of the nation reveals a negative relationship. I have

investigated that matter in more detail elsewhere and found indeed that people are not happier and healthier in nations with lavish social security systems than in equally rich nations where Father State is less openhanded (Veenhoven 2000c). Apparently we can live equally well in a residual welfare state. This finding illustrates that ‘presumed’ qualities of life do not always match ‘apparent’ quality-of-life.

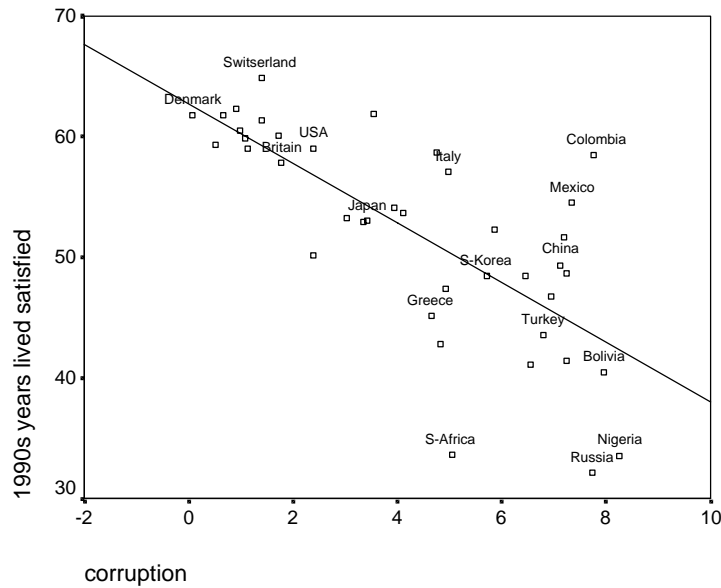
Justice

Righteousness is also commonly mentioned as prerequisite for a good life. In this analysis I consider three indicators of justice in nations: rule of law, respect of civil liberties and prevalence of corruption. The relation between corruption and HLY is depicted in figure 5.

The scattergram reveals a strong negative relationship with this aspect of *injustice*. The other indicators of justice in nations are also strongly related to HLY. See scheme 12.

The partial correlations are also positive, but much smaller. Like in the case of freedom this does not necessarily mean that the independent effect of justice is small, since the common variance of justice and wealth can be due to an effect of the former on the latter.

Scheme 12: Corruption and Happy-Life-Years in 40 nations in the 1990s



Explained Variance

As a last step I considered how well these societal inputs predict the output of years lived happily. I limited that analysis to the variables of which we have at least 60 cases. This left me with wealth, economic freedom, political freedom, income inequality, rule of law and civil rights. Together these six societal qualities explain 66% of the variance in HLY in nations. Consideration of more variables in smaller nation sets yields R² values of .85 and more.

This implies that much of the things policy makers aim at do indeed matter for Gross National Happiness. Why then bother about measuring that matter? One reason is that not everything deemed required for a good life is really necessary. We saw this in the cases of income equality and social security. Secondly some of the things that are required today may lose relevance tomorrow. This is illustrated by the diminishing utility of wealth. Thirdly, HLY is more easily measured than current indexes of presumed quality-of-life and lastly the concept of Happy-Life-Years is also easier to understand.

Conclusion

The concept of Gross National Happiness can be operationalized as the degree to which citizens in a country live long and happily and can be quantified in the number of Happy Life Years (HLY) per capita.

HLY differentiates well across nations and the pattern of differences makes sense. HLY differentiates also over time and can therefore serve to monitor long-term progress.

This indicator pairs public appeal with theoretical relevance and has many advantages over current indices of social progress such as the Human Development Index.

Appendix A: Apparent quality-of-life in 67 nations in the 1990s

Nation	Enjoyment of life ¹ (scale 0 - 1)	Length of life ² (in years)	Happy Life Years ³
Argentina	6,8	72,6	49,1
Armenia	3,7	70,9	26,2
Australia	7,3	78,2	56,9
Austria	6,1	76,7	47,0
Azerbaijan	4,9	71,1	34,7
Bangladesh	6,0	56,9	34,2
Belarus	4,4	69,3	30,3
Belgium	7,3	76,9	56,4
Bolivia	6,2	60,5	37,5
Brazil	7,0	66,6	46,3

Britain	7,2	76,8	55,4
Bulgaria	4,3	71,2	30,5
Canada	7,7	79,1	60,6
Chile	6,9	75,1	52,0
China	6,7 ⁴	69,2	46,7

Appendix A continued:

Nation	Enjoyment of life ¹ (scale 0 - 1)	Length of life ² (in years)	Happy Life Years ³
Colombia	8,1 ⁴	70,3	57,1
Costa Rica	7,9 ⁴	76,6	60,8
Croatia	5,5	71,6	39,6
Czecho- Slovakia	5,9	71. 7	42. 3
Denmark	8,0	75,3	59,9
Dominican Rep.	6,8	70,3	47,9
Ecuador	6,4	69,5	44,5
El Salvador	7,4	69,4	51,7
Estonia	5,0	69,2	34,6
Finland	7,5	76,4	57,1
France	6,4	78,7	50,5
Georgia	4,1	73,2	29,7
Germany	6,7	76,4	51,4
Ghana	7,7 ⁴	57,0	43,9
Greece	5,3	77,9	41,4
Guatemala	7,2	66,1	47,3
Honduras	7,0	68,8	48,0
Hungary	5,6	68,9	38,6
Iceland	7,8	79,2	61,8
India	6,2	61,6	38,5
Ireland	7,6	76,4	58,4
Italy	7,0	78,0	54,6
Japan	6,3	79,9	50,0
Latvia	4,8	68,0	32,5
Lithuania	5,0	70,2	35,1
Luxembourg	7,8	76,1	59,2
Macedonia	5,2	71,9	37,6
Mexico	7,3	72,1	52,5
Moldavia	3,0	67,8	20,5
Netherlands	7,5	77,5	58,3
Nicaragua	7,6	67,5	51,2

Nigeria	6,3 ⁴	51,4	32,6
Norway	7,4	77,6	57,5
Panama	7,1	73,4	52,3
Paraguay	6,8	69,1	46,7
Peru	6,0	67,7	40,4

Appendix A continued:

Nation	Enjoyment of life ¹ (scale 0 - 1)	Length of life ² (in years)	Happy Life Years ³
Philippines	6,5	67,4	43,7
Poland	6,2	71,1	43,8
Portugal	6,7	74,8	50,5
Romania	5,4	69,6	37,7
Russia	4,2	65,5	27,8
South-Africa	5,7	64,1	36,7
South-Korea	6,3	71,7	45,3
Slovenia	6,0	73,2	43,8
Spain	6,5	77,7	50,8
Sweden	7,6	78,4	59,9
Switzerland	8,1	78,2	63,0
Turkey	5,9	68,5	40,4
Ukraine	3,3	68,5	22,5
Uruguay	6,7	72,7	49,0
USA	7,4	76,4	56,9
Venezuela	6,4	72,3	46,0

Technical Details

Average enjoyment of life assessed by means of surveys in general public samples. This list is based on responses to questions on life-satisfaction.

Most scores are based on responses to the following question: "All things considered, how satisfied or dissatisfied are you with your life-as-a-whole now? 1 dissatisfied 10 satisfied".

Scores on this 1-10 scale were transformed linearly to range 0-10. This transformation is explained in the introductory text, chapter 7. 3.

Scores of most Latin American nations are based on responses to a somewhat different question.

"In general, would you say that you are satisfied with your life? Would you say that you are...very satisfied (4), quite satisfied (3), satisfied (2) or not very satisfied (1)?"

Scores on this 1-4 scale were transformed to range 0-10 by means of expert weighing of response options. This so-called 'Thurstone procedure' is explained in chapter 4/3 of the introductory text.

Since the above 1-10 questions have also been used in five of these Latin American nations, I could check whether this transformation yields comparable results. The transformed scores appeared to be slightly higher and were therefore corrected by subtracting 0,5 point.

This combination of scores on two slightly different questions results in a list of 67 cases. The number of cases is smaller if one restricts to responses on identical questions. Restriction to a common question on 'happiness' yields 60 cases and limitation to the above 1-10 life-satisfaction item 54 cases.

Life expectancy is estimated on the basis of civil registrations of birth and death. Source: Human Development Report 2001, table 1.

Life-satisfaction scores may be inflated in some countries, due to under sampling of rural population or inexperience with anonymous interviewing. Dubious cases are China, Colombia, Ghana and Nigeria.

Appendix B: Characteristics of nations, used in correlational analysis

Wealth	
Income	Purchasing power per head in 1995 Human Development Report 1999, table 1 (UNDP)
Freedom	
Economic	Index of economic freedom 1999. Heritage Foundation
Political	Index of suppression of political rights 1994-95 (reversed) Karantnycky et. al. 1995
Personal	Index of freedom in personal life. Involves absence of restrictions to traveling, religion, marriage, sex and suicide. Both legal restrictions and public acceptance Veenhoven 2000b
Equality	
Income equality	Gini index Human Development Report 2001 table 12 (UNDP)
Gender equality	SIGE index of gender inequality. Dijkstra 2000
Equality in happiness	Standard deviation of life satisfaction. Veenhoven 2002
Brotherhood	
Tolerance	Responses to survey questions about the kind of people one would like to have as a neighbor. World Value Surveys 1990-1995, items 51-60

Trust in compatriots	Responses to survey question World value Surveys 1990-1995, item 41
Voluntary work	Responses to survey questions World value Surveys 1990-1995, items 28-35
Social security	Expenditures in percent of GDP ILO 1995

Appendix B continued:

Justice	
Rule of law	Index of Institutional Quality 1997-98 IMF, World Economic Outlook October 2000
Violation of civil rights	Index of suppression of civil rights 1994-95 Karantnycky et. al. 1995
Corruption	Rating by foreign businessmen and journalists Transparency International

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